# Notice to Suppliers

## HSE impact of Hexavalent Chromium

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For the attention of the Quality Manager.

**Scope/Applicability:**

This NTS applies to all Suppliers or Partners who handle engine-run hardware.

**Dear Supply Partner,**

**Introduction:**

Hexavalent Chromium (Cr(VI)) compounds may form on core engine parts as a result of interactions, at engine operating temperatures, of Chromium at the surface of nickel-based and stainless-steel alloy parts with certain dry film lubricants or assembly consumables, or atmospheric dust (e.g. calcium oxide and/or calcium hydroxide) drawn into the engine during operations.

Even if residue is not visible, Cr(VI) residue may be present on the surface of certain engine parts. Visible residue may range from pale white-beige to yellow, orange, light brown and/or dark brown. Hexavalent Chromium Cr(VI) also may also appear as a powder or staining.

Cr(VI) is a carcinogen when it is inhaled, and it is also a respiratory sensitiser/asthmagen which may cause occupational asthma. It is also a skin sensitiser which may cause allergic dermatitis. Individuals exposed to chromium(VI) require skin and/or respiratory health surveillance to identity any early signs of sensitisation.

There is a recognised potential risk of exposure to such Cr(VI) containing residues during maintenance and overhaul processes on Gas Turbine Components. In addition, other sources of worker exposure to Cr(VI) occurs during "hot work" such as welding, cutting or grinding of stainless steel and other alloys containing chromium. Personnel can also be potentially exposed during spray painting, sanding, or abrasive blasting of chromium containing paints.

This Notice is issued to highlight the hazard to relevant areas where this risk may be potentially present during work activities. Recipients should ensure that their local HS&E representatives are aware of this hazard and the relevant risk assessments & working procedures are updated to comply with applicable Health & Safety legislation. The guidance given in this NTO should be shared with all areas exposed to this potential hazard.

This issue is also known to occur on non-Rolls-Royce gas turbine hardware.

**Action Required:**

The management of substances hazardous to health is an employer's responsibility. HSE advice should be sought to ensure local procedures take account for this hazard to health. Due to the toxic nature of the material, all Suppliers and Partners are advised to ensure that potential exposures for personnel are reduced to As Low As Reasonably Practicable (ALARP). The actions described below would typically be taken in order to protect personnel against the health risks from hexavalent chromium exposure:

The following components should be assumed to be contaminated with low levels of Cr(VI) until cleaned:

- All core engine components rearwards of the LP Compressor
    - This includes Borescope plugs and attaching fittings.
- External pipework which draws air from the rear of the IP compressor or further aft.

Risk assessments in relevant areas should be reviewed, irrespective of whether Cr(VI) deposits are visible or not.

Even if deposits are not visible –

- Avoid direct skin contact on service run core engine components rearwards of the LP Compressor.
- Wear disposable chemical resistant gloves such as nitrile (EN374-3 or equivalent) – ensure glove type is compatible with any chemicals (lubricants, degreasers etc.) used in a maintenance activity. Chromium containing powders can contaminate other glove types (i.e. cut resistant, riggers, cotton etc.).
- Wear long sleeves/coveralls to avoid direct skin contact.
- No drinking, eating, smoking or chewing gum in the work area. Wash hands after work activity and before meal breaks.
- Wash hands and face after completion of task and removal/disposal of PPE.

In addition to the practices described above, if deposits are visible -

- DO NOT RAISE DUST – e.g. using a wire brush. The use of compressed air for cleaning should be prohibited.
- For surface dust removal (such as wet wiping / vacuum removal) - tasks to be carried out ONLY by persons who have been made aware of this hazard and are using an agreed method (e.g. Safe System of Work, RAMS) that does not raise dust. No single method can be specified due to the range of product types & locations.
- Wear respiratory protection (minimum P3 EN149, or the US equivalent NIOSH approved P95 or P100 particulate half-face filtering face piece).
- Wear Safety glasses or goggles, disposable coveralls with hood and boots covers.
- Dispose of single use PPE (coveralls, gloves, respirators) and wet wipes as hazardous waste - use of an approved hazardous waste contractor to remove and dispose of the waste.
- If using a vacuum cleaner for removal, ensure a HEPA filter is fitted and waste dust can be contained for disposal as hazardous waste. Ensure the cleaner is appropriately rated if operating in a designated hazardous area.
- Potentially contaminated clothing/overalls/gloves should be laundered at site and not taken home.

**NTS Category:**

Safety

**Authorised by:**

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